

Amendment and Response
Applicants: Garland L. Segner et al.
Serial No.: 10/632,145

Attorney Docket: EV31008US

REMARKS

Claims 1 to 49 were pending in this application. The Examiner withdrew from consideration claims 3 to 6, 10, 11, 16, 22, 23, 26 to 29, 31, 32, 37, 43 to 47, and 49. Claims 15, 20, 21, 36, 41, and 42 have been canceled and claims 1, 24, 45, 46, 48, and 49 have been amended. The amendments to the claims merely add the subject matter of the canceled dependent claims to the independent claims. Accordingly, this amendment after final should be entered because it simplifies the issues for an appeal. Claims 1, 2, 7 to 9, 12 to 14, 17 to 19, 24, 25, 30, 33 to 35, 38 to 40, and 48 will be pending and under examination after entry of this amendment.

The Examiner rejected claims 1, 2, 7 to 9, 12 to 14, 17 to 19, 24, 25, 30, 33 to 35, 38 to 40, and 48 under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 5,749,837 to Palermo et al. ("Palermo") and U.S. Patent Application Publication No. US 2004/0243168 A1 to Ferrera et al. ("Ferrera").

Applicants respectfully traverse this rejection of the claims. Although Applicants disagree with the Examiner, the claims have been amended to clarify the invention. Independent claims 1, 24, 45, 46, 48, and 49 now recite that the guide wire comprises a single coil comprising 3 to 24 wire strands wrapped helically parallel to one another, the wire strands wrapped helically parallel to one another forming a stranded tubular structure having a longitudinal central axis, and the angle between the wire strands and the longitudinal central axis is from 10 to 45 degrees. These features of the amended independent claims were recited in canceled dependent claims 15, 20, 21, 36, 41, and 42. These canceled dependent claims were rejected over the combination of Palermo, Ferrera, and a third reference. This rejection is discussed below. The combination of Palermo and Ferrera does not suggest the currently claimed invention. The Examiner agrees

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with this conclusion because a third reference was used to reject the subject matter of the amended claims.

The Examiner stated that Palermo discloses the claimed invention "except for a single coil comprising a plurality of wire strands helically wrapped parallel to one another and disposed on tapered distal region of the core". Paragraph number 7 of the March 20, 2006 Office Action. Contrary to the Examiner's assertion, Ferrera does not remedy this defect of Palermo. The Examiner states that Ferrera teaches a device for intravascular insertion comprising "a single coil 140 comprising a plurality of wire strands 143, as best seen in Figures 27 and 28, helically wrapped parallel to one another and disposed on at least a distal tapered portion of a guidewire core." Paragraph number 7 of the March 20, 2006 Office Action. In Figures 27 and 28, Ferrera teaches a helical microcoil 140 for intravascular insertion, not a guide wire. See paragraph [0088]. Ferrera does not disclose a plurality of wire strands helically wrapped and disposed on at least a distal tapered portion of a guide wire core, rather the device is inserted into a catheter 22 during delivery and expelled from the catheter using a push wire 32 (paragraphs [0064] & [0065]). No wire is present inside the helical microcoil 140. Further, push wire 32 is not described as tapered. In addition, even if the combination of microcoil 140 and pusher 32 were considered a guide wire, the combination does not have "a coil disposed on a tapered distal region of the core".

Regarding the Examiner's obviousness argument, there is no motivation to remove the centralmost wire of the permanently implantable microcoil of Ferrera, and then to replace a coil of Palermo's temporary indwelling guide wire with the modified structure of Ferrera because the microcoil of Ferrera is not used as or in a guide wire. Further, Ferrera states that a guide wire is used to introduce catheter 22 to an aneurism, and then the guide wire is removed before the microcoil is introduced (paragraph [0065]). Ferrera has described certain guidewire designs

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(Figures 13 and 14) but these designs are comprised of multiple filaments wrapped in a sheath, quite unlike the claimed design of a central core wire having a shell of helically wrapped filaments. If it was obvious from Ferrera to construct a guide wire similar to the claimed guide wire then Ferrera would have disclosed such a design in the patent, but they did not.

Accordingly, Applicants respectfully request that the Examiner withdraw this rejection of the claims.

The Examiner rejected claims 15, 20, 21, 36, 41, and 42 under 35 U.S.C. § 103(a) as unpatentable over Palermo in view of Ferrera and in further view of U.S. Patent No. 5,165,421 to Fleischhacker et al. ("Fleischhacker").

Applicants respectfully traverse this rejection of the claims. Although Applicants disagree with the Examiner, the claims have been amended to clarify the invention. Independent claims 1, 24, 45, 46, 48, and 49 now recite that the guide wire comprises a single coil comprising 3 to 24 wire strands wrapped helically parallel to one another, the wire strands wrapped helically parallel to one another forming a stranded tubular structure having a longitudinal central axis, and the angle between the wire strands and the longitudinal central axis is from 10 to 45 degrees. These features of the amended independent claims were recited in canceled dependent claims 15, 20, 21, 36, 41, and 42. Thus, although claims 15, 20, 21, 36, 41, and 42 have been canceled, the rejection of these claims is the rejection applicable to the subject matter of the pending amended claims.

Palermo, Ferrera, and Fleischhacker do not suggest the claimed invention. The discussion of Palermo and Ferrera above also applies to this rejection.

The Examiner states that Palermo shows a guidewire comprising "a plurality of wire strands 112, 132 helically wrapped parallel to one another...." Paragraph number 6 of the March 20, 2006 Office Action. As shown in FIGS. 5A and 5B of Palermo, coils 112 and 132 are not both part of a single coil, as required

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by the pending claims. Fleischhacker does not remedy this defect of Palermo. Fleischhacker does not teach or suggest a guide wire comprising a single coil. In Fleischhacker, two coils are formed. See FIGS. 7 to 10. The inner and outer coils are oppositely wound with the outer coil inner peripheral surface being wound in an interference fit relationship with the outer peripheral surface of the inner coil. Column 2, lines 42 to 46. The importance of the two coils is stressed throughout Fleischhacker. For instance, Fleischhacker states that: "[d]ue to the interference fit of the inner [and] outer coils throughout their axial lengths, there is substantially a 1 to 1 transmittal of torque from one end of the cable to the other regardless of the direction of rotation of the cable." Column 4, lines 47 to 51. Neither Palermo nor Fleischhacker teaches or suggests the use of a single coil.

In addition, Palermo and Fleischhacker do not teach or suggest a guide wire in which the angle between the wire strands and the central longitudinal axis is from 10 to 45 degrees. In Palermo and Fleischhacker, the wire strands are oriented generally normal to the axis of the wound cable. In claims 21 and 42 of the subject application, the angle is from 10 to 45 degrees, which is generally or somewhat parallel to the axis of the wound cable. Fleischhacker teaches away from an angle from 10 to 45 degrees. Fleischhacker states that the cable has "high torque resolution even when bent about a relatively tight radii of curvature...." Column 2, lines 59 to 65. This desired performance is satisfied by orienting wire strands generally normal to the axis of the wound cable rather than generally parallel to this axis. The subject application provides "a more flexible and torqueable distal end of the guide wire" (page 3, lines 21 and 22), in part, by having an angle from 10 to 45 degrees. See page 3, lines 3 to 23, of the application.

Ferrera does not remedy these defects of Palermo and Fleischhacker. Ferrera does not teach the use of a single coil in a guide wire or an angle from 10

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to 45 degrees in a guide wire. Ferrera was cited by the Examiner for showing an "angle between the wire strands and central longitudinal axis within the range of 10 to 45 degrees as seen in Figure 1." Paragraph number 11 of the March 20, 2006 Office Action. However, the structure shown in Figure 1 is a microcoil that cannot be used as a guide wire. In one embodiment of Ferrera, a vasoocclusive device is formed by helically winding the microcoil of Figure 1. The vasoocclusive device is then introduced into an aneurysm. See Figs. 3, 6, and 7.

Ferrera describes guide wires in connection with Figures 13 and 14. In these figures, straight lengths of cable are contained within a wound cover. See paragraphs [0020] and [0073] for a description. The microcoil of Figure 1 is not used in these guide wires. The description of guide wires in Ferrera does not suggest the use of a single coil or an angle of from 10 to 45 degrees in a guide wire.

In addition, Ferrera does not describe the angle between the wire strands in Figure 1. The description of Figure 1 (see paragraph [0061]) does not recite any such angles, nor does it define any angles of interest. Since Figure 1 is an isometric view it is not possible to measure an angle directly from the figure. From the examples given in paragraph [0061] in combination with Figure 1 where the strands are shown in contact with one another, it is not possible to calculate the angles between the strands and the central core wire. This is because the specification does not provide information regarding angles of twist, number of filament turns per unit length, or similar measures.

Even if Ferrera did suggest the use of microcoils in a guide wire, Ferrera still would not suggest the claimed invention because the guide wire suggested would have several parallel microcoils contained within a wound cover as in Figures 13 and 14. Such a guide wire would not suggest the claimed guide wire comprising a single coil over a tapered core.

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In summary, Ferrera does not suggest the use of a single coil or an angle of from 10 to 45 degrees in a guide wire. Therefore, Ferrera does not remedy the defects of Palermo and Fleischhacker. Accordingly, Applicants respectfully request that the Examiner withdraw this rejection of the claims.

In view of the above amendments and remarks, Applicants respectfully request that the Examiner withdraw the objection to the specification and the rejections of the claims.

If any additional fees are due in connection with the filing of this paper, please charge the fees to our Deposit Account No. 16-2312. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our deposit account.

Respectfully submitted,

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By Patrick J. O'Connell
Customer No. 009561
Terry L. Wiles (29,989)
Patrick J. O'Connell (33,984)
Popovich, Wiles & O'Connell, P.A.
650 Third Avenue South, Ste. 600
Minneapolis, MN 55402
Telephone: (612) 334-8989
Attorneys for Applicants